

## **ADMINISTRATIVE FACTORS EFFECTING CONCERN-BASED ADOPTION MODEL OF INFORMATION AND COMMUNICATIONS TECHNOLOGY FOR INSTRUCTION IN SCHOOLS UNDER THE SECONDARY EDUCATION QUALITY IMPROVEMENT PROJECT**

Nopadol Chenaksara\*

### **ABSTRACT**

The purposes of this research were to determine 1) the level of actual administrative factors in schools under the secondary education quality improvement project 2) the level of adoption of information and communications technology for instruction in schools under the secondary education quality improvement project 3) the causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project. The sample consisted of 220 English, Mathematics, Science, and Computer teachers (each subject = 55 teachers) in sixteen provinces under the secondary education quality improvement project. The instrument used for data gathering was a questionnaire about administrative factors based on Richard M. Steers' theory and concern-based adoption model of information and communications technology for instruction in schools based on Hall, G.E. and Hord, S.M.'s theory. Frequency, percentage, arithmetic mean, standard deviation, and stepwise multiple regression analysis were used for data analysis

The results of the research were as follow ;

1. The level of administrative factors as a whole and as an individual factor in schools were at a high level.
2. The level of adoption of information and communications technology for instruction in schools in the Northern, Central and Southern parts of Thailand. as a whole and as an individual factor were at a high level accept mechanical use, routine, integration, and renewal were at a Moderate level.
3. Administrative factors effecting concern-based adoption model of information and communications technology for instruction both by part concerned and subject concerned in differences aspects.

### **INTRODUCTION**

This research focuses on studying the level of actual administrative factors in schools, the level of concern-based adoption model of information and communications technology for instruction in schools, the causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project implemented by The Office of Basic Education Commission, Ministry of Education THAILAND and The World Bank.

### **BACKGROUND TO THE RESEARCH**

Education should be organized to help develop people into perfect beings, leading a perfect life both in mind and body. It should have a holistic view stressing the relationship between mind, body, brain and society. Students must learn to be independent. They must be taught to learn how to think for themselves, to make decisions on their own, to be able to work as a team and to have original ideas. They must be able to help develop their communities, and conserve natural resources, energy and the environment. (National Education Act 1999, introduction.)

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\* Assistant Professor Major, RTAR., Ph.D., Department of Educational Administration, Silpakorn University., Monitoring and Evaluation Specialist for SEQI project [World Bank Loan No.4052 TH] The Office of Basic Education Commission, Ministry of Education

For the enrichment of those objectives, The Office of National Primary Education Commission (former name of OBEC) began to offer the first three years of secondary school in primary schools, as part of a major effort to rapidly provide secondary schooling to a much larger proportion of primary school completers. Moreover, while Thailand's urban centers and provincial capitals have long had access to high quality teachers and to a lesser extent materials and technology, the vast majority of Thai high schools are in rural or semi-urban areas and do not have up to date technology, materials, or sufficient numbers of English language instructors to enable high levels of performance from the student population.

The quality of Thai secondary schools should be dramatically improved by targeting assistance to schools in the districts, which have received substantially fewer resources than the provincial schools in recent decades. Moreover, focusing on improving the quality of schooling in the expanded schools will make a significant difference in educational quality, as the teachers in these schools have had few opportunities to improve their knowledge and pedagogical skills since beginning to offer secondary schooling 10 years ago.

The SEQI : secondary education quality improvement project was established and implemented by The Office of Basic Education Commission (OBEC), Ministry of Education THAILAND and The World Bank since April 2002 to March 2004. Information and communications technology for instruction was the appropriated to used as the innovative methodology to carry on following objectives The main objective of the project was to improve quality and integration of science, mathematic, English and computer education in 150 schools by 2004. and the major Project outputs were ; 1) Teachers improved ability to use computers in teaching major subjects. 2) Teachers improved ability to teach Mathematic, Science, English and Computer subject.

3) Students knowledge and ability in using computer technology to support their learning in major subjects. 4) Computer systems set up in 150 schools. 5) Alternative models being developed for expansion and whole school development. (Secondary Education Quality Improvement Project, The Office of the National Primary Education Commission, 2002)

## OBJECTIVES OF THE RESEARCH

1. To know the level of actual administrative factors in schools under the secondary education quality improvement project
2. To know the level of adoption of information and communications Technology for instruction in schools under the secondary education quality improvement project
3. To know the causal effect of administrative factors to concern-based adoption adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project

## THEORETICAL FRAMEWORK

Dependent variables concerned for this research was administrative factors depended on Richard M. Steers' theory (Steers, 1977 : 7-10) and the specific dependent variables of information and communications technology focused for this research was the concern-based adoption model of information and communication technology for instruction depended on Hall, G.E. and Hord, S.M.'s theory (Hall and Hord, 1987. Available from : <http://www.iste.org>) and also associated with the Innovation and the Implications for Faculty Development theory of Mid-Atlantic Teaching and Technology Support (MATTS) at George Washington University (Widmayer, MATTS 2002) as presented in figure 1

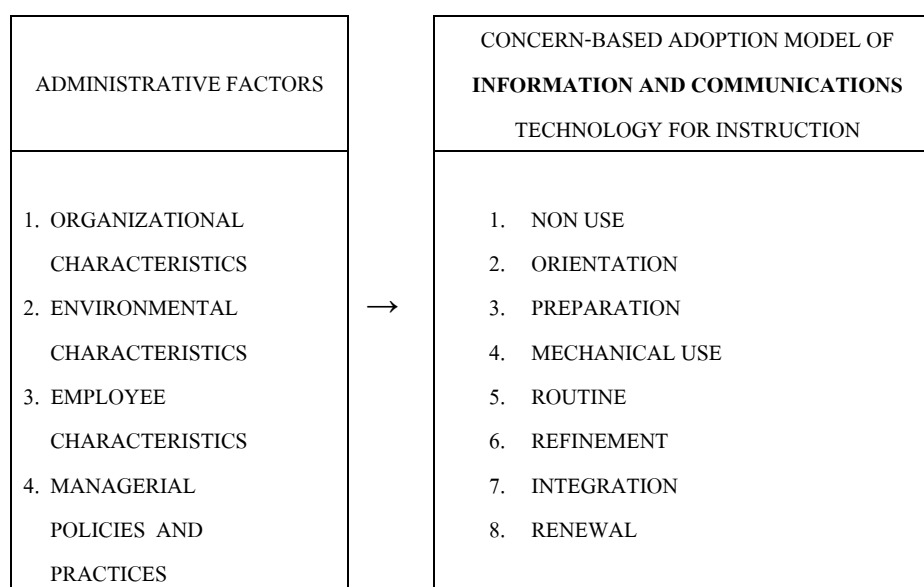


Figure 1 : THEORETICAL FRAMEWORK

## KEY CONCEPTS

**1. Organizational Characteristics :** consideration to organizational structure and technology, structure refers to the relatively fixed relationships that exist in an organization with respect to the arrangement of human resources. It is the unique way an organization fits its people together to create organization. As such, the notion of structure includes such factors as the extent of decentralized control, the amount of task specialization, the extent to which interpersonal interactions are formalized, and so forth. Thus, managerial decisions concerning structure represent decisions concerning how people will be grouped for task accomplishment. Technology refers to the mechanisms used by an organization to transform raw inputs into finished outputs.

**2. Environmental Characteristics:** consideration to two rather distinct, though related, aspects. The external environment refer to those forces that arise outside an organization's boundaries that affect internal organizational decisions and actions. The influence of such environmental factors on organizational dynamics is generally believed to consist of the following: 1) the relative degree of environmental stability 2) the degree of environmental complexity and 3) the degree of environmental uncertainty. The internal environment, known generally as organizational climate, included a variety of perceived attributed of the work

environment that have been shown to be related to certain facets of effectiveness, particularly those measured on an individual level.

**3. Employee Characteristics :** consideration to the role of individual differences across employees as they related to effectiveness, these individual differences can have a direct bearing on two important organizational processes that can have a marked impact on effectiveness, these are organizational attachment, or the extent to which employees identify with their employee, and individual job performance.

**4. Managerial Policies and Practices :** consideration to strategic goal setting, resource acquisition and utilization, creating a performance environment, communication processes, leadership and decision making, organizational adaptation and innovation.

**5. Non-Use = Non-Use :** Innovation not used at all. Teachers may not be aware of innovation

**6. Information Gathering = Orientation and preparation :** Learning of an innovation and begins to understand how the innovation works. Gathering information about an innovation. Preparation for using the innovation for the first time.

**7. Initial Use = Mechanical use and Routine use :** Innovation is used on a short term, day to day basis. Instructor may still be learning how to use the innovation.

Focused more on the mechanics of using the tool. Can be several years in length. Classroom supplement. In support of tradition way of teaching. Personal and task management. Technology is separate from the normal curriculum. Instructors make few changes in the way they are using the innovation.

**8. Adaptation = Refinement and Integration :**

Instructors begin to reflect upon how to use the innovation to increase impact on students. Instructors experimenting with using the innovation in new ways. Technology is integrated into the curriculum. Clear connection between technology and the curriculum. Teachers being to use technology with their students as a way to enhance the current way of teaching and the existing curriculum. Fewer instructors at this stage.

**9. Re-evaluation = Renewal :**

Instructors reevaluate the quality of their use of the innovation. They begin to think about major modifications to increase the impact on their students. Instructors reconceptualize the function of their classroom Begin to use technology to create a much different learning environment. Instructors discover new uses for the technology in their classroom. Classroom learning environment redefined to use technology to its maximum advantage.

**RESEARCH METHODOLOGY**

This research aimed to determine the level of actual administrative factors in schools, the level of concern-based adoption model of information and communications technology for instruction in schools, the causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project. Therefore, the procedure should be based on the following research methodology.

**RESEARCH DESIGN**

This research was descriptive research and used the research design by The one shot, non – experimental case study.

**POPULATION**

English, Mathematics, Science, and Computer Teachers of 69 schools in 16 provinces under the secondary education quality improvement project were the population for this research.

**SAMPLES**

English, Mathematics, Science, and Computer Teachers of 55 schools in 16 provinces under the secondary education quality improvement project

sample size = 220 teachers (each subject = 55 teachers)

sample size ; by Krejcie and Morgan's table

sampling technique ; stratified random sampling

**MEASUREMENT DEVICE**

The measurement device used in this research was a five rating scale questionnaire with reliability of cronbach's alfa-coefficient = 0.9694, used for evaluating administrative factors, and concern-based adoption model of information and communications technology for instruction

**DATA COLLECTING**

The data was collected from samples directly by assistant researcher in monitoring and evaluation staff of the SEQI project

**STATISTICAL USED**

The data was analyzed by using the SPSS program to draw the frequency, percentage, arithmetic mean, standard deviation, and stepwise multiple regression analysis

**CONCLUSION DISCUSSION AND RECOMMENDATION**

The conclusion discussion and recommendation on research findings of the causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project was presented as follows :

**RESEARCH FINDING CONCLUSIONS**

1. Level of administrative factors in schools under

the secondary education quality improvement project. The research found that administrative factors in schools under the secondary education quality improvement project in the Northern, Central and Southern parts of Thailand, as a whole and as an individual factor, were at a high level.

2. Level of adoption of information and communications technology for instruction in schools under the secondary education quality improvement project. The research found that adoption of information and communications technology for instruction in schools under the secondary education quality improvement project in the Northern, Central and Southern parts of Thailand. as a whole and as an individual factor were at a high level accept mechanical use, routine, integration, and renewal were at a Moderate level.

3. The causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project. The research found that by parts concerned ;

3.1 administrative factors ( $X_{tot}$ ) and organizational characteristics ( $X_1$ ) were the causal effect of CBAM of all parts of Thailand.

3.2 administrative factors ( $X_{tot}$ ) and organizational characteristics ( $X_1$ ) were the causal effect of CBAM in Northern part of Thailand.

3.3 administrative factors ( $X_{tot}$ ) and managerial policies and practices ( $X_4$ ) were the causal effect of CBAM in Central part of Thailand.

3.4 employee characteristics ( $X_3$ ) and environmental characteristics ( $X_2$ ) were the causal effect of CBAM in Southern part of Thailand.

4. The causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project. The research found that by teachers concerned ;

4.1 employee characteristics ( $X_3$ ) was the causal effect of CBAM of Mathematics teachers

4.2 administrative factors ( $X_{tot}$ ) was the causal effect of CBAM of Science teachers

4.3 administrative factors ( $X_{tot}$ ) and managerial policies and practices ( $X_4$ ) were the causal effect of CBAM of English teachers

4.4 administrative factors ( $X_{tot}$ ) was the causal effect of CBAM of Computer teachers

5. administrative factors ( $X_{tot}$ ) was the Mode of causal effect of CBAM in All parts, Northern, Central, and of Science, English, and Computer teachers.

6. The causal effect of administrative factors to concern-based adoption model of information and communications technology for instruction in schools under the secondary education quality improvement project. The research found that by sub variables concerned ;

6.1 environmental characteristics ( $X_2$ ) was the Mode of causal effect of Non Use sub variables in All parts, Northern, Central, Southern and of Mathematics and Science teachers.

6.2 environmental characteristics ( $X_2$ ) was the Mode of causal effect of Orientation sub variables in All parts, Northern, Central, Southern and of Science, English and Computer teachers.

6.3 employee characteristics ( $X_3$ ) was the Mode of causal effect of Preparation sub variables in All parts, Northern, and of Mathematics, Science, and English teachers.

6.4 administrative factors ( $X_{tot}$ ) was the Mode of causal effect of Mechanical Use sub variables in All parts, Northern, Central, and of Science, and Computer teachers.

6.5 environmental characteristics ( $X_2$ ) was the Mode of causal effect of Routine sub variables of all components except Science teachers.

6.6 employee characteristics ( $X_3$ ) was the Mode of causal effect of Refinement sub variables in All parts, Northern, Central, Southern and of Mathematics, and Science teachers.

6.7 administrative factors ( $X_{tot}$ ) was the Mode of causal effect of Integration sub variables in All parts, Northern, Central, and of English teachers.

6.8 administrative factors ( $X_{tot}$ ) was the Mode of causal effect of Renewal sub variables in All parts, Northern, Central, and of Mathematics teachers.

## DISCUSSION

The finding above showed that ;

1. Administrative factors ( $X_{tot}$ ) was the component variables effecting to CBAM in all parts of Thailand accepted in southern part, Organizational characteristics ( $X_1$ ) was the important variable in all parts and in northern part, in central part, managerial policies and practices ( $X_4$ ) was the important variable. Only employee characteristics ( $X_3$ ) and environmental characteristics ( $X_2$ ) effecting to CBAM in southern part, It might according to the reason of the procedure done in southern part of Thailand were emphasized on the individual responsibility of each teachers and also with their interestingly on training courses the project preferred for them than the settle down of school organizational characteristics and managerial policies and practices of each school. Like the conclusion of Al-Ammer's study (1994) that individual characteristics more important on training motivation and effectiveness than organizational characteristics. And the finding of Abbey's study (2000) conclusion that settle down organizational characteristics can created an environment for individual learning.

2. Administrative factors ( $X_{tot}$ ) was the component variables effecting to CBAM by the opinion of teachers of all subjects accepted mathematics teachers, because their opinion were only employee characteristics ( $X_3$ ) effecting to CBAM, and English teachers have more suggestion that accepted administrative factors ( $X_{tot}$ ), managerial policies and practices ( $X_4$ ) was another important variable, It might according to the reason of the mathematics teachers' opinion on 8 sub-variable of CBAM from non use to renewal were 5 frequencies on employee characteristics ( $X_3$ ), 2 frequencies on environmental characteristics ( $X_2$ ) and only one frequency on administrative factors ( $X_{tot}$ ) The number of frequency showed that mathematics teachers believe that 5 in 8 sub-variable of CBAM might completely done by employee characteristics ( $X_3$ ) than other components of administrative factors. Like the conclusion of Preston's study (1994) that social behavior (on computer used) by the theory of planned behavior (Ajzen, 1985) depended on an individual's attitude toward the behavior, subjective norms relating to the behavior,

and perceptions about the individual's own level of control over the behavior. This view point on the important of individual characteristic of the employee was also like the finding of Wenger's study (2004) that professional characteristic of superintendent make the ethical difference on decision-making.

3. Independent variable, administrative factors ( $X_{tot}$ ) effecting to CBAM and all sub-variables of CBAM, when concerned CBAM and all sub-variables of CBAM by parts and 4 subject teachers in 64 relation forms, the interested frequencies were as followed ;

3.1 administrative factors ( $X_{tot}$ )

23 frequencies

3.2 organizational characteristics ( $X_1$ )

4 frequencies

3.3 environmental characteristics ( $X_2$ )

29 frequencies

3.4 employee characteristics ( $X_3$ )

24 frequencies

3.5 managerial policies and practices ( $X_4$ )

9 frequencies

From this data it might conclusion that all administrative factors ( $X_{tot}$ ) were necessary or important to CBAM and all sub-variables of CBAM, which environmental characteristics ( $X_2$ ) and employee characteristics ( $X_3$ ) were more important than organizational characteristics ( $X_1$ ) and managerial policies and practices ( $X_4$ ). It might according to the reason of the procedure done in all parts of Thailand were emphasized on the individual responsibility of each teachers and also with their interestingly on training courses the project preferred for them than the settle down of school organizational characteristics and managerial policies and practices of each school. Like the conclusion of the research discussion number 1 before.

## RECOMMENDATION

Recommendations for the causal effect of administrative factors to CBAM of information and communications technology for instruction in schools under the SEQI project

1. School administrators should exercise more to support their teachers develop their ability of using concern-based adoption model of information and communications technology for instruction in schools, especially of using in the level of mechanical use, routine, integration, and renewal.

2. School administrators should concentrate in maintaining and supporting the development of environmental characteristics ( $X_2$ ) and employee characteristics ( $X_3$ ), according to the opinion of four subject teachers.

3. School administrators should concentrate in supporting and developing more on organizational characteristics ( $X_1$ ) and managerial policies and practices ( $X_4$ ).

4. There should be personal development programs on using computer for instruction at the advance level for those four subject teachers in this project.

5. There should be personal development programs on management and using computer for instruction at the advance level for those school administrators in this project.

#### Recommendations for Further Research

1. There should be further action research for instructional development of each schools in the project.

2. The participatory action research method should be applied in development of the management and instructional development of each schools in the project.

3. There should be more research studies on this case by qualitative method.

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